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DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

Cambodia: A New Petroleum Crisis

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
January 1971

INTELLIGENCE MEMORANDUM

Cambodia: A New Petroleum CrisisIntroduction

1. Since 21 November 1970, Communist forces have controlled a major segment of Route 4, the last remaining road link to the port of Kompong Som. The sustained interdiction of Route 4 disrupted the movement of tank trucks, which had been delivering most of Phnom Penh's required petroleum products from the country's only oil refinery at Kompong Som. Initial emergency measures to re-supply Phnom Penh via the Mekong River were dealt a serious setback by heightened Communist attacks against shipping on the Mekong during the first week of January. This memorandum reviews these developments and their probable consequences.

Deliveries from Kompong Som

2. With the exception of a few specialty products, the refinery at Kompong Som has been producing more than enough petroleum to satisfy the country's needs. National consumption in 1969 was about 280,000 tons,* compared with the plant's designed capacity of 600,000 tons a year. Since

* Unless otherwise indicated, all tonnages are expressed in metric tons.

Note: This memorandum was prepared by the Office of Economic Research and coordinated within CIA.

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the beginning of hostilities, total national consumption has steadily declined, and was by early last fall at least 35% below the 1969 rate.*

3. Normally, the refinery's products reached the major distribution facilities in Phnom Penh via rail. Since May, however, the rail line and the two alternate highways to Phnom Penh (Routes 2 and 3) have remained interdicted because of destroyed bridges and/or enemy presence, leaving Route 4 the sole overland route for shipping petroleum products to the interior. Considerable difficulties were encountered in effecting the changeover from rail to road transport, but by early summer a fleet of tank trucks had been mobilized to supply Phnom Penh via Route 4.

4. The security of Route 4, however, was uncertain. A prolonged interdiction of the highway during enemy attacks ranging from Kompong Speu to Kirirom in June and July caused a critical depletion of reserves in Phnom Penh and forced the refinery to shut down for two weeks because of a lack of storage capacity when products could not be shipped. Alternative means of getting petroleum to Phnom Penh were explored, and shipments up the Mekong were seen as the most effective solution. The government's moves to acquire an additional small tanker and the barges required to implement such an operation were dropped, however, when Route 4 was reopened. Recommendations by oil company officials that equipment be purchased as insurance against a repetition of the crisis went unheeded, despite repeated harassment and short-term interdictions of Route 4 in the months that followed.

* *The decline in petroleum consumption is due to the retardation of industrial operations and transport resulting from widespread disruptions of lines of communication by enemy operations. Cambodia's petroleum requirements are rapidly changing and no precise estimate of current needs is available. There is a conflict between data provided by oil company officials on the consumption of specific products and their statements on total monthly consumption. Data on daily requirements by product yield a monthly total of about 17,000 tons for a period when officials indicate monthly consumption averaged about 15,000 tons (see paragraph 15).*

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A New Petroleum Crisis

5. The most sustained interdiction to date was initiated on 21 November, when elements of the NVA 101-D Regiment captured the Kirirom Hydroelectric Plant and moved on to seize the Pich Nil Pass section of Route 4 (see the map). Within a few days, all bridges on a 15-mile segment of highway* had been destroyed, and the enemy has maintained firm control over that section of the road.

6. The latest disruption of petroleum deliveries caught the Cambodians in a bad position. Although the combined capacity of petroleum storage facilities in Phnom Penh is about 24,000 tons and the available truck fleet was said by oil company officials to have been capable of easily maintaining that level despite occasional interdictions, only about 16,900 tons of products were on hand as of 21 November.** In gross terms, these stocks could maintain consumption for about a month, but stocks of gasoline and kerosine were sufficient for only a little more than three weeks. Petroleum transport equipment was also in short supply, with all but about one-third of the country's larger tank trucks isolated outside the Phnom Penh area. The only Cambodian vessel available for the movement of bulk petroleum shipments was the *Mekong*, a converted LCT with a capacity of only some 680 tons, which was already committed to the transport of aviation gas from South Vietnam.

7. By the end of November, it became apparent to the Cambodians that Route 4 would remain unuseable for an extended period of time and that Phnom Penh would begin to run short of petroleum products within a month or so unless emergency measures were taken immediately. Efforts by Cambodian and oil company officials to charter tankers in the optimum (2,000 GRT) class for immediate use proved fruitless. None could be obtained before February. Rationing was imposed on civilian consumers on 11 December, although by that time, supplies at many

* From O Chhal to the junction with Route 44.

** This assumption is not supported by data provided by the oil companies on truck fleet capacity and performance, which indicate that the fleet was barely capable of sustaining deliveries at this level.

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service stations in Phnom Penh and Battambang had already been exhausted. The fuel crisis in Battambang was alleviated, however, when Shell and Esso, acting on their own initiative, began sending convoys of petroleum tank trucks over Route 5 from Thailand.* The first of these shipments reached the city on 15 December, and they have continued without disruption.

Emergency Measures

8. Faced with a critical situation, the Cambodian government sought outside help, particularly to increase shipments up the Mekong. A Cambodian démarche to the government of South Vietnam in the second week of December brought a pledge of full cooperation from South Vietnam's Prime Minister Khiem, and officials of Shell, Esso, and Caltex branches in Saigon immediately sought to divert petroleum and transport equipment from local service.

9. Emergency petroleum shipments up the Mekong got under way on 10 December, when Shell's French-flag tanker *Angkor* (901 GRT) loaded gasoline and diesel fuel at the Defense Fuel Supply Center at Nha Be, South Vietnam. This vessel delivered two cargoes -- about 935 tons each -- to Phnom Penh on 14 and 23 December. Esso's smaller tanker, the *Nam Viet* (485 GRT), reached Phnom Penh later in the month. These apparently were the only petroleum deliveries to Phnom Penh in December. Their estimated total volume was nearly 2,400 tons, compared with Phnom Penh's normal monthly requirements of about 17,000 tons of assorted products.

10. The government tried to mount a resupply operation via Route 1 from Saigon, but encountered considerable difficulty in obtaining trucks and drivers because of the high risks and lack of an effective system of insuring owners for losses. Because of heavy concentrations of enemy troops in areas bordering this route, commercial traffic

* These companies, again on their own initiative, had experimented with such shipments following the extended interdiction of Route 4 last June.

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normally moves only during the day and in armed convoys. It was feared that increased use of Route 1 would stimulate increased enemy attacks on vehicle traffic. On 8 December, Cambodian officials claimed to have 50 tank trucks available for the trip to Saigon. On 10 December, they reported that they hoped to have a 30-truck convoy ready by mid-December. The first Cambodian truck convoy from Saigon, however, consisted of only 16 trucks, and did not arrive in Phnom Penh until early January. The high costs and risks involved in road transport and the relatively small volumes carried -- about 8.5 tons per truck -- have made the Cambodians unenthusiastic about this mode of supply, except as a last resort.

Insecurity on the Mekong

11. The security of shipping on the Mekong has deteriorated drastically since the first of January. Although three small tankers under gunboat escort reached Phnom Penh without incident in December, the last of these was subjected to hostile fire on 3 January near the South Vietnamese border while returning to Nha Be. On 5 January a convoy consisting of the Cambodian tanker *Mekong* and four large barges on loan from Shell, Esso, and Caltex, with a total of about 2,700 tons of petroleum products for Phnom Penh, was twice attacked near Neak Luong. Two barges and a tug were destroyed, and three Cambodian gunboats sustained heavy damage from enemy mortar, rocket, and recoilless rifle fire. The *Mekong* escaped these attacks, only to be destroyed by enemy gunfire near the scene of the second attack when it resumed its voyage to Phnom Penh on the following day. On 8 or 9 January, the *Yellow Dragon* (3,900 GRT),* a dry cargo ship awaiting a pilot for the voyage to Phnom Penh, was seriously damaged by explosives emplaced by frogmen at its anchorage about one mile north of the South Vietnam border. Covert reports indicate that the VC plan extensive harassment of traffic on both the Mekong and Route 1 throughout January.

* *The Yellow Dragon, registered under the Somali flag, is owned by the Sino-Cambodian entrepreneur, Kuo Wen Ch'uan. Some sources have indicated that Gen. Lon Nol was the principal partner in Kuo's shipping company.*

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12. To coordinate measures for countering the increased enemy threat to Mekong shipping, Cambodia's Council of Ministers on 8 January created a Zone Speciale Mekong (ZSM) under the command of Brig. Gen. Srey Saman. Saman proposes to give ARVN responsibility for clearing both banks of the Mekong from the border to Neak Luong (see the map). The Vietnamese would also provide all naval support and share with the 7th Air Force the responsibility for air support.

13. The first heavily armed convoy to proceed up river under ZSM control reached Phnom Penh on 17 January. The convoy consisted of three small merchant ships, two tugs, and four barges carrying about 1,200 tons of petroleum and was escorted by 36 gunboats, airborne gunships, and fire control spotters. Despite this formidable armada of escort craft, the convoy received two light attacks by fire (no damage reported) en route to Phnom Penh, and on the return voyage a cargo ship was damaged by recoilless rifle fire. A second convoy, consisting of five small landing craft carrying ammunition and petroleum and 27 gunboats, also was fired on by rockets and recoilless rifles but reached Phnom Penh safely on 19 January. If petroleum transporters should be lost despite the new security measures, existing charters may be abruptly voided. Clearly, reestablishing good security along the Mekong will take time and many troops. Although the Esso tanker *Nam Viet* and the Shell tanker *Angkor* have been leased for one and six months, respectively, oil company officials considered it extremely doubtful that their crews would comply. These vessels were not in the most recent convoys. A Philippine concern which leased tugs and barges (aggregate capacity about 6,800 tons) and a small tanker (capacity about 2,000 tons) apparently intends to fulfill its commitment, however. Two of its barges were scheduled to join four Caltex barges in transporting about 4,800 tons of petroleum up the Mekong on 21 January. If all of the Philippine vessels continue in service and if the Mekong is kept open, they alone could deliver Phnom Penh's basic requirements.

14. The outright purchase of small tankers or barges to be manned by Cambodian naval personnel promises no immediate solution to Cambodia's transport dilemma. Both barges and tankers of the desired type are scarce items in Southeast Asia. Furthermore, oil company officials doubt that the Cambodians could provide a crew capable of operating a tanker



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without several weeks of instruction. An effective tow operation probably could be mounted, however, if barges can be obtained.

Current Stocks and Requirements

15. The estimation of a "normal" rate of petroleum consumption for Phnom Penh is complicated by the fact that it is the central distribution point for all but the most southerly parts of the country that lie close to the refinery at Kompong Som. Consequently, petroleum "consumption" (or requirements) in Phnom Penh in part reflect such diverse factors as harvesting activity in the countryside or the military's acquisition of more helicopters. If, however, the volume of petroleum products distributed from storage facilities in Phnom Penh in the few months preceding the current petroleum shortage reflects a current norm, including consumption by FANK, we find that consumption averaged about 575 tons a day. Conceding that information on petroleum requirements is rather hazy, the estimates presented in the table are the best currently available. An oil company official has estimated that possibly as much as 20% of this requirement had been destined for the Battambang area, which is now receiving some petroleum from Thailand.

16. Essential petroleum requirements have been estimated by the Cambodian government and oil company officials to total about 290 tons a day. This amount includes FANK requirements for aviation and vehicle fuels, fuels for the two public powerplants and the city's water works, as well as lesser quantities required by government agencies and a few essential consumer product and service industries.

17. When petroleum sales to all non-essential consumers were stopped in early January, an aggregate of 9,400 tons of petroleum were on hand in the major bulk storage facilities in Phnom Penh.* Central reserves maintained by the oil companies had dwindled from some 16,900 tons on 21 November

* These include the facilities of Shell, Esso, Caltex, FANK, and the two public powerplants. Relatively insignificant additional amounts were located at industrial plants and in the tanks of local distributors.

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Phnom Penh: Petroleum Stocks and Requirements

	Metric Tons			
	Stocks on Dates Shown		Estimated Daily Requirements	
	21 Nov 1970	7 Jan 1971	Normal	Essential
Total, by facility		9,384		
Central reserves <u>a/</u>	16,870	4,167		
FANK		2,915		
Powerplants EDC I and II		2,302		
Total, by product <u>b/</u>		9,384	573	289
Gasoline		1,095	56	31
Central reserves	1,991	570		
FANK	N.A.	525		
Auto diesel (gas oil)		2,322	77	47
Central reserves	4,650	1,548		
FANK	N.A.	774		
Jet fuel JP-1		61	20	16 <u>c/</u>
Central reserves	720	61		
FANK	N.A.	0		
Jet fuel JP-4		2,568	24	24
Central reserves	300	1,248		
FANK	N.A.	1,320		
Aviation gas 100/130		377	27	27
Central reserves	719	81		
FANK	N.A.	296		
Aviation gas 115/145	201	67	2	
Kerosine	1,163	0	59 <u>c/</u>	
White spirit	41	0		
Industrial plant diesel		1,279	165	71
Central reserves	5,049	592		
EDC I Village Catholique	N.A. <u>d/</u>	687		
Powerplant diesel (fuel oil)		1,615	143	73
Central reserves	2,036	0		
EDC II Chak Angre	N.A. <u>d/</u>	1,615		

a. Bulk storage facilities of Shell, Esso, and Caltex. Those in Phnom Penh have an aggregate capacity of 24,150 metric tons and those at Pochentong airfield total 234 metric tons.

b. Stored in central reserves unless otherwise indicated.

c. Estimated.

d. Both powerplants normally carry a 60-day supply in their own tanks.

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to 4,200 tons. Stocks of such critical items as aviation gasoline and JP-1 jet fuel (for FANK's MIG fighters) were believed to be sufficient for only a few days, and it appeared that fuel for the powerplants at Village Catholique (EDC I) and Chak Angre (EDC II) would be exhausted before the end of January. Recent information indicates that rationing of electric power has stretched out stocks of powerplant fuel, but they will become critically low if not replenished before the end of January. Drawings of jet fuels and aviation gas from central reserves have also been less than anticipated. On the other hand, vehicle fuels are being used at rates substantially in excess of estimated essential requirements. Stocks of vehicle fuels were relatively plentiful, however, and should last well into February despite the unexpectedly high usage.

18. Phnom Penh's urban population will be most affected by fuel shortages. The city's water supply, sewage system, and central power stations are dependent on external sources for the heavy fuels required by their generators. Employees of non-essential businesses that may be forced by lack of fuel or power to cease operations will be critically affected. In most households, the lack of kerosine for cooking will be viewed more seriously than a reduced supply of electricity. Although charcoal is an alternate cooking fuel, its price has risen drastically in recent months because supplies have been reduced by disruptions to transport. So far, Phnom Penh's residents have shown no significant reaction to the shortage of fuel for vehicles. There is a thriving black market in gasoline bootlegged from ARVN stocks at Neak Luong. Continued deliveries of foodstuffs from Battambang, a supplier of beef, pork, rice, and fruits, are more affected by the security of Route 5 than by supplies of fuel, which are available to trucks in Battambang. The small farmers who constitute most of Cambodia's non-urban population are largely self-sufficient in all respects and will be little affected by the fuel crisis.

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Current Transport Options

The Mekong

19. Selected enemy units have been tasked with increasing harassment of shipping on the Mekong. Their persistence in continuing attacks in the face of the exceptionally strong repressive fire power of gunboats and aircraft escorting the recent convoys poses a threat that foreign shipowners and crews may be unwilling to risk. In view of these developments, the utility of the Mekong route remains in doubt.

Overland Hauls

20. The truck fleet handling the overland distribution of petroleum from the refinery at Kompong Som to Phnom Penh prior to 21 November consisted of about 140 regular and converted* trucks, with capacities averaging between 8 and 9 tons. These were supplemented by some 50 trucks used for local distribution, with average capacities of about 7 tons. Oil company officials assert that prior to the closure of Route 4, Cambodia's fleet of petroleum trucks was having no difficulty in keeping Phnom Penh supplied and that stocks were quickly replenished after deliveries were halted as a result of sporadic interdictions.** However, the interdiction of Route 4 has isolated 53 tank trucks at the Kompong Som refinery. About 40 tankers are not accounted for and about 50 of the larger oil trucks are in the Phnom Penh area at present.

Route 1

21. There is a consensus among oil company officials that so long as the overland routes from

* Largely flat-bed trucks equipped with tanks. After Route 4 was interdicted, many owners of these trucks removed the tanks and turned to transporting other cargoes. Presumably, they could easily be reequipped to carry petroleum.

** As noted earlier, however, data they provided on truck fleet capacity and performance indicate that the truck fleet was barely adequate.

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Kompong Som are closed, Route 1 is the best alternative truck route for petroleum shipments to Phnom Penh, provided that security can be maintained. Although it is the main resupply road for ARVN troops at Neak Luong, it passes through areas that are heavily invested with VC/NVA troops. Its use is confined to convoys under military escort traveling only in daylight hours.

22. Saigon is 144 miles from Phnom Penh via Route 1. Sources have estimated that petroleum trucks from Phnom Penh could make one round trip every five days, or about six trips a month. A cycle of three days rather than five would seem to be feasible, however, judging from past performance on the Kompong Som - Phnom Penh route, which is only six miles shorter than the trip to Saigon. Under normal conditions, truckers were able to make two round trips from Kompong Som to Phnom Penh over a three-day period. In September, largely because of increased security precautions, the turnaround cycle was two days. Allowing an extra day for delays at the ferry across the Mekong at Neak Luong and the need for more stringent road checks and convoy control on Route 1, a three-day cycle seems reasonable.

23. If all the 50 trucks said to be available in Phnom Penh were utilized in transporting petroleum from Saigon, and if each carried an average load of 8 tons and made 10 trips a month, the fleet could deliver about 4,000 tons a month,* or nearly half of Phnom Penh's estimated essential monthly requirement of 8,700 tons. If the fleet were supplemented by approximately 60 trucks of equivalent capacity, essential requirements could be covered. The 53 trucks stranded at Kompong Som would nearly suffice and were to be loaded onto LST's on 21 January for transfer to Saigon. If Phnom Penh were to depend on overland supply alone, the Cambodian truck fleet would have to be supplemented, possibly by a loan of US-made trucks from ARVN or US forces.**

* This estimate includes no allowance for a proportion of the fleet being out of service for repairs. Under intensive use, this factor could increase the truck requirement by 20%.

** The army F-1 tractor trailer, with a capacity of about 11.4 tons, appears to be ideal for this service.

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Route 5

24. Cambodia's tank truck fleet is inadequate to deliver the required amounts of petroleum to Phnom Penh from the Thai border, which is 240 miles from Phnom Penh via Route 5. Furthermore, traffic on Route 5 in recent weeks has been subjected to increasing harassment around Muong and Pursat by bands of Khmer Communists with the avowed intent of isolating Phnom Penh from the northwestern provinces. In view of this threat, it is unlikely that Thai truckers could be induced to extend their current deliveries beyond Battambang, 195 miles from Phnom Penh.

Rail Shipments from Thailand

25. Rail shipments to Phnom Penh from Thailand also hold little immediate promise. At least several weeks would be required to repair railroad bridges south of Pursat that have been damaged or destroyed by enemy action. Cambodia has 42 railroad tank cars, each with a capacity of nearly 60 tons. Only two are located on the Pursat-Battambang-Poipet rail line, however. Of the remaining 40 cars, 15 are isolated at Phnom Penh and the rest at Kompong Som. No tank cars were included in the Thai rolling stock recently transferred to Cambodia.

26. In view of the much greater efficiency of rail transport as opposed to road transport, however, it would seem advisable to investigate the possibility of restoring the Phnom Penh-Poipet line to service. Rail shipments from Thailand as far south as Pursat currently are feasible. The road distance from Phnom Penh to Pursat is 105 miles, compared with the 144 miles to Saigon. One difficulty with this route, however, is that it would be vulnerable to sabotage by bands of local Communists.

Route 4

27. A joint ARVN and FANK operation to clear the road was launched on 13 January. This route during much of last summer and fall was capable of sustaining Phnom Penh's entire requirements for petroleum. The road will not be immediately available, however, even assuming that the joint

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FANK/ARVN operation is successful in the near future. Cambodian officials estimate that even after the road is secured, at least another month will be required to repair the many damaged bridges that cannot be bypassed.* Using locally available timber and some of the US bridging equipment already in Phnom Penh, ARVN engineers should be able to make Route 4 passable sooner, possibly within weeks. In any case, it appears unlikely that any meaningful deliveries to Phnom Penh via Route 4 can be resumed before early February at the earliest. Even then, the maintenance of a reliable supply flow would seem to require a sustained ARVN presence along Route 4.

Airlift

28. The formation of airlift contingency plans was begun by MACV in early December, and on 15 January an airlift consisting of two C-130 sorties per day was initiated to deliver by drum 8,300 gallons (about 22 tons) of aviation gas to Phnom Penh daily. These deliveries will cover FANK's most critical needs for this product but will in no way alleviate Cambodia's deepening petroleum crisis.

29. An expanded airlift that would meet most of Phnom Penh's critical requirements of nearly 290 tons per day would not appear to offer any insurmountable problems. An efficient manner of airlifting the required tonnages would be the use of C-130s equipped with two bladder tanks carrying a total of 6,000 gallons (17 tons). Thus about 17 sorties a day could transport the required tonnages. C-130 aircraft could load, fly the 145 miles between Saigon and Phnom Penh, unload, and return in about three hours so that each aircraft could fly about three sorties per day. This requirement is well within established operating norms maintained

* Between Kompong Som and Phnom Penh, there are seven major bridges whose lengths range from 120 to 328 feet, as well as numerous smaller bridges.

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by operating C-130 squadrons in South Vietnam. Thus about six C-130s could do the job.*

Conclusions

30. Cambodia is facing a growing petroleum crisis that will not be alleviated until Cambodian and ARVN forces are able to clear and maintain the security of major lines of communication to Phnom Penh. It has become increasingly clear that the Cambodian forces, primarily oriented to maintaining static defenses, are not capable of keeping the major routes open for extended periods of time by themselves. Although effective measures had been developed for meeting Phnom Penh's petroleum requirements by shipments up the Mekong in leased commercial craft, this alternative may be nullified if sharply increased attacks on river traffic inflict additional losses. Civilian shipowners and crews may refuse to risk voyages up the Mekong if the extensive FANK/ARVN land, water, and air operations do not maintain security. Since the Cambodians have lost their only tanker, they are dependent upon foreign vessels whose continued service is uncertain.

31. The 30 to 40 tank trucks immediately available in Phnom Penh are capable of transporting from Saigon less than half of current military and critical civilian petroleum requirements. The planned transfer of 53 trucks and 10 trailers from Kompong Som to Saigon may enable the Cambodian truck fleet to provide the essential amounts of petroleum, but it is likely that still more trucks will be required. These could come from US or ARVN stocks. The increasing insecurity of Route 5 and existing interdictions to the rail line

** Obviously, this is an overly simplified analysis. Storage bladder tanks would have to be located in Phnom Penh. Considerably more aircraft would be needed if drums were used instead of bladder tanks. This analysis does not consider such questions as the availability of suitable aircraft and/or alternative uses to which they might have to be put.*

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between Phnom Penh and Pursat appear to rule out the possibility for any significant immediate relief through increased shipments from Thailand, although the longer term potential of these routes seems to warrant a closer inspection.

32. In view of the critically low level of fuel reserves in Phnom Penh, the uncertainty of commercial operation on the Mekong, and the current inadequacy of Cambodia's available tank trucks, the Cambodians are likely to need transport assistance if they are to avoid a serious curtailment of military operations and the operation of vital civilian installations. Potentially effective assistance could entail the provision of additional tank trucks for use on Route 1, a resupply effort by the South Vietnamese navy, an airlift, or some combination of these measures.

33. Phnom Penh's fuel shortage has already been felt by vehicle owners and in households dependent on kerosine for cooking and lighting. Some workers may lose employment as non-essential businesses are forced to cease operations for lack of fuel. Major textile plants and other consumer industries may be shut down, decreasing the supply of goods available to stem inflationary pressures produced by vastly increased military expenditures. If shortages were to become so acute as to force the city waterworks to shut down, a serious health hazard could develop. The war would at last be brought home to the populace. If essential public services are maintained, however, the populace will probably bear the inconveniences rather lightly. The independent rural population will be little affected. FANK requirements for aviation and vehicle fuels will need to be maintained at all costs, however.